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Original Article (Quantified)

Structural Equation Modeling of the Relationship between Total Quality Management and Firm Performance with the Mediating Role of Organizational Learning

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Abstract

The purpose of this study was to examine the relationship between Total Quality Management (TQM) and organizational performance with the mediating role of organizational learning in the Water and Wastewater Department of Sirjan. In terms of purpose, this research is applicable; and in terms of nature and method, it is correlational. The statistical population consisted of all employees of the mentioned organization, totaling 154 individuals in the year 2025. Due to the limited size of the population, all members were selected as the sample and were studied through a census. Data were collected by three standardized questionnaires. Data analysis was performed by structural equation modeling in LISREL software. The findings indicate that there is a positive and significant relationship between TQM and organizational performance through the mediating role of organizational learning. There is also a positive and significant direct relationship between TQM and organizational performance, between TQM and organizational learning, and between organizational learning and organizational performance.

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Extended Abstract

Introduction

In the contemporary era, organizations are confronted with a wave of transformations that necessitates a re-examination of traditional models (Naji & Alirezaei, 2025) and has driven them to seek improvements in effectiveness and performance (Semaihi et al., 2023). Performance refers to the process of ensuring that an organization pursues strategies leading to the achievement of its objectives (Alirezaei et al., 2022). Performance measurement emphasizes how management and value creation are carried out for stakeholders and customers (Peighan et al., 2020). Performance is a process that involves classification, measurement, valuation, and judgment over a specific and defined period. In fact, performance represents a set of mechanisms whose implementation and utilization within organizations leads to the continuous improvement of employee performance, enabling the organization or company to achieve its goals more effectively (Babaei Meybodi & Alirezaei, 2020).

Today, learning is a vital pathway for recognizing and adapting to the accelerating pace of change. Consequently, educational organizations—which are the primary producers of knowledge and information, the most extensive institutions of knowledge creation, and, in other words, the core drivers of development in any society—are not immune to contemporary changes. Through continuous learning, they must prepare individuals to confront these changes. To be capable of adapting to current conditions, changes, and challenges; such organizations must institutionalize learning within themselves and, in other words, transform into learning organizations (Faribarz, 2016).

In recent decades, the increasing level of competition has had a significant impact on industries, prompting management scholars to focus their efforts on creating, developing, and applying mechanisms that help improve productivity and product quality and, consequently, reduce costs (Alirezaei & Moradi, 2023). Total Quality Management (TQM) is a managerial philosophy that, through the application of continuous improvement methods, seeks to optimally utilize available opportunities and resources to enhance quality, with a strong emphasis on customer satisfaction (Babaei Meybodi & Alirezaei, 2018).

Today, water and wastewater organizations face numerous challenges, including rising water demand, diminishing water resources, aging infrastructure, and the necessity of providing high-quality and sustainable services. In this context, improving the performance of such organizations through the implementation of modern managerial approaches is of critical importance. Accordingly, the present study seeks to address the fundamental question: how the application of Total Quality Management and the strengthening of organizational learning can enhance the performance of the Water and Wastewater Department of Sirjan and contribute to the provision of higher-quality and more sustainable services to citizens? Therefore, the main research question is whether the implementation of Total Quality Management in the Water and Wastewater Department of Sirjan has an effect on organizational performance and whether organizational learning can play a mediating role in this relationship.

Review of Theoretical Foundations

Total Quality Management (TQM):

Total Quality Management refers to the ability to transform plans into predetermined goals at the most desirable level of quality. It also involves achieving organizational objectives through the coordination of human, financial, technical, and informational resources within a defined environment, while considering factors such as innovation and creativity. Furthermore, it encompasses the knowledge and art of organizing, coordinating, leading, and controlling group activities in order to achieve common goals. Total Quality Management

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consists of four dimensions: top management support, employee participation, continuous improvement, and customer focus (Babaei Meybodi & Alirezaei, 2018).

Organizational Learning:

Learning, which is a lifelong process, has various definitions. From an individual perspective, learning refers to accessing information, understanding it, and acquiring skills. From an organizational viewpoint, learning focuses on acquiring traditions, perspectives, strategies, and transferring knowledge (Huang et al., 2022).

In today's competitive business environment, organizations need to utilize their knowledge-based assets to survive and achieve sustainable growth. These resources enhance organizational performance (Moradi & Alirezaei, 2024). Learning and acquiring knowledge are considered competitive stages for modern organizations. In other words, organizational learning is a long-term activity that transforms current conditions into favorable competitive advantages. What our employees learn today will shape the future of our organization.

Organizational Performance:

Performance is a process through which employees are formally evaluated and assessed at specific intervals. Organizational performance is one of the most important constructs discussed in management research and is undoubtedly considered the primary criterion for measuring success in business organizations. In an economic enterprise where the objective is to increase shareholders' wealth, attention to profit growth facilitates the achievement of this goal. In fact, measuring financial performance reflects the extent to which organizational objectives have been achieved. Considering the definitions of organizational effectiveness and organizational performance, and with regard to the operational goals emphasized in financial performance, performance assessment represents the degree to which an organization attains its intended outcomes (Samuel et al., 2018).

Research Background:

Rezaloo et al. (2026) conducted a study aimed at identifying the dimensions and validating a model of organizational capacity-building to enhance human resource productivity. The findings indicated that the organizational capacity-building model for improving human resource productivity is based on five fundamental dimensions: individual capacity-building, process capacity-building, institutional capacity-building, cultural and organizational learning capacity-building, and governance capacity-building. These dimensions encompass components such as the development of job-related knowledge and skills, strengthening motivation and job satisfaction, innovation and continuous improvement, participatory leadership, development of technological infrastructure, sustainable financing, inter-organizational collaboration, promotion of a learning culture, reinforcement of ethical values and organizational trust, as well as alignment with legal frameworks and macro-level policies.

Hayatmehr et al. (2026) conducted a study to evaluate the impact of artificial intelligence applications and smart learning on strategic thinking skills and academic performance of management students, with the moderating role of individual ethics. The results revealed that the use of artificial intelligence tools has a positive effect on strategic thinking (systems thinking, creative thinking, future-oriented thinking, and critical thinking), smart learning, and academic performance. The mediating role of strategic thinking (critical thinking and future-oriented thinking) was confirmed in the relationship between the use of artificial intelligence and academic performance, as well as in the relationship between smart learning and academic performance. Furthermore, individual ethics, in addition to having a positive impact on smart learning, plays a moderating role in the relationship between smart learning and strategic thinking (systems thinking, critical thinking, and future-oriented thinking).

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Research Methodology:
This study is applicable in terms of purpose, and correlational in terms of nature and method. The data collection tools consisted of three standardized questionnaires: the Total Quality Management questionnaire (16 items; Ross, 1993), the Organizational Learning questionnaire (24 items; Senge, 2009), and the Organizational Performance questionnaire (28 items; Hersey & Goldsmith, 1980).
The statistical population of this research included all employees of the Water and Wastewater Department of Sirjan, totaling 154 individuals in the year 1404 (2025). Due to the limited size of the population, the sampling method used was a census.
To assess the reliability of the questionnaires, Cronbach's alpha coefficient and the Composite Reliability (CR) index were calculated, and the validity and reliability of the questionnaires were confirmed.

Research Findings:
Main Hypothesis:
There is a significant relationship between Total Quality Management (TQM) and organizational performance with the mediating role of organizational learning in the Water and Wastewater Department of Sirjan.
The significance value between TQM and organizational performance is **12.64**, which is greater than **1.96**; therefore, the relationship between TQM and organizational performance is significant. The standardized coefficient between these two variables is **0.87**. Since standardized coefficients greater than **0.6** indicate strong relationships, there is a strong and positive relationship between TQM and organizational performance.
The significance value between TQM and organizational learning is **6.58**, which exceeds **1.96**, indicating that the relationship between TQM and organizational learning is significant. The standardized coefficient is **0.47**, and because standardized values between **0.3 and 0.6** represent moderate relationships, there is a moderate and positive relationship between TQM and organizational learning.
The significance value between organizational learning and organizational performance is **8.41**, which is greater than **1.96**; thus, the relationship between organizational learning and organizational performance is significant. The standardized coefficient between the two variables is **0.61**, which is above **0.6**, indicating a strong and positive relationship.
Overall, the results confirm that there is a significant relationship between TQM and organizational performance with the mediating role of organizational learning in the Water and Wastewater Department of Sirjan.
Discussion and Conclusion:
The purpose of this study was to examine the relationship between Total Quality Management (TQM) and organizational performance with the mediating role of organizational learning in the Water and Wastewater Department of Sirjan. The results indicated that TQM has a positive and significant effect on human resource productivity, considering the mediating role of organizational learning. TQM can improve organizational performance through the enhancement of organizational learning. In other words, as the numerical value of TQM increases, organizational learning also increases, which in turn leads to improved organizational performance.
These findings are consistent with the results of previous studies, including Peighan et al. (2020), Masoudi (2021), and Pokharel & Choi (2015), thereby confirming the outcomes of the present research.
Based on the findings of this study, it is recommended at the practical level that an integrated and comprehensive TQM system be implemented with a focus on continuous improvement,

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customer orientation, and employee participation. Simultaneously, organizational learning should be strengthened by creating a platform for knowledge sharing, conducting training programs, and fostering a culture of innovation and problem-solving.

Key performance indicators (KPIs) related to both TQM and organizational learning should be clearly defined and carefully monitored so that the impact of these activities on overall organizational performance becomes measurable. Finally, continuous evaluation and revision of the TQM system and organizational learning initiatives are necessary to ensure alignment with organizational goals and sustained performance improvement.